

## REMARKS

The application has been amended to distinguish the claimed invention over the cited prior art, and to place the application, as a whole, into a *prima facie* condition for allowance. Substantial care has been taken to avoid the introduction of any new subject matter into the application as a result of the foregoing amendments.

Claims 1 - 8 and 10 - 21 have been rejected under 35 U.S.C. §112, first paragraph, as purportedly failing to comply with the written description requirement. Specifically, the Examiner has stated that the claims contain subject matter which was purportedly not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the invention was filed, had possession of the claimed invention.

In particular, the Examiner has stated that:

"Claim 1 contains the limitation of 'pinion wheels impart forces to the plate substantially exclusively in the direction of movement of the plate' in lines 13 - 14." and

"Claim 15 contains the limitation of 'pinion wheels impart forces to the plate substantially exclusively in the direction of movement of the plate' in lines 15 - 16." Applicant respectfully traverses the Examiner's basis for rejection of the claims under 35 U.S.C. 112, first paragraph.

Applicant has further amended each of claims 1 and 15 to reflect that the blade plate actually moves longitudinally, in two opposite directions (i.e., into and out of a sealing, cut-off position, in the damper). Applicant respectfully submits that support for these amendments is found throughout the specification as originally filed, as being part of the essential function of a sliding blade damper.

Applicant respectfully submits that support for the aforementioned claim language limitations is not only shown in the drawings, but is inherently supported by the disclosure as originally filed. Specifically, instead of using teeth, each of the pinion wheels uses **cylindrical pinion pins** (see ¶ [0033] of the application as published in US 2006/0242316). It is a matter of basic geometry and engineering principles that when a cylindrical object (a pinion pin) bears against a flat surface (an edge of one of the teeth of blade plate 16), discounting the slight frictional lateral forces caused by the

fact that the pinion pins are actually moving in a sinusoidal path, relative to the blade plate, the force imparted from the cylindrical object onto the flat surface is perpendicular to the flat surface of the blade plate; that is, parallel to the direction of movement of the blade plate, being transmitted through the line of contact between the cylindrical pinion pin and the flat surface of the tooth edge. This is an inherent mechanical characteristic that is defined by the use of a pinion wheel with cylindrical pinion pins and a blade plate having teeth defined, at least in part, by flat parallel tooth edges extending normal to the direction of movement of the blade plate. A cylindrical object, which is bearing against a straight flat surface, regardless of the direction the cylindrical object is being moved, can **only** exert a force on the flat surface, that is **normal** to the flat surface (again, excluding comparatively negligible lateral frictional forces). The Examiner's attention is also directed to the following statement from ¶ [0009] of the application as published: "The toothed edges of the blade plate engage with specially designed pinion wheels to impart a **linear** force to the blade plate thereby causing it to translate into and out of the area within the frame to open and close the damper, depending upon the direction of rotation of the pinion wheels." (Emphasis added).

Applicant, accordingly, respectfully submits that it would be readily apparent to one of ordinary skill in the art, that "linear" could only mean along the direction of movement of the blade plate, as that is substantially the only direction the force **can** be directed, given the structures provided. In view of the foregoing, Applicant submits that there is more than sufficient disclosure in the application as filed, to indicate that the Applicant had possession of the claimed invention at the time the application was filed, because, as a practical matter, that is the sole mode in which the disclosed structure **can** function.

Accordingly, Applicant respectfully submits that the Examiner's basis for rejection of claims 1 - 8 and 10 - 21 under 35 U.S.C. §112, first paragraph should be deemed moot, and reconsideration and withdrawal of the Examiner's rejection of claims 1 - 8 and 10 - 21, under 35 U.S.C. §112, first paragraph, are respectfully solicited.

Claims 1 - 8 and 10 - 21 have been rejected under 35 U.S.C. §103(a) as being unpatentable over *Bachmann et al.*, US 4,327,893 in view of *Imase et al.*, US 6,023,989. Claims 1 - 7 and 10 - 21 have been rejected under 35 U.S.C. 103(a) as being unpatentable over *Bachmann et al.*, in view of *St-Germaine et al.*, US 6,311,800 B1. Applicant respectfully traverses the Examiner's substantive bases for rejection of the claims.

With respect to the Examiner's rejection of independent claims 1 and 15, under 35 U.S.C. 103(a) based on the *Bachmann et al.* and *Imase et al.* references, Applicant firstly respectfully submits that the Examiner's purported combination of the *Imase et al.* and *Bachmann et al.* references is improper. Furthermore, the Examiner has failed to address Applicant's arguments that not only is there a lack of teaching to combine these references, but also there is an affirmative, express teaching, within the disclosures of the two references, **against** their combination.

Two or more references may not be combined to support an assertion of obviousness of a claimed invention **absent a teaching or suggestion to their combination**. Further, two or more references may not be properly combined, if, to do so, would frustrate the functions, goals or purposes of one or more of the respective references.

The *Bachmann et al.* reference is directed to a blade damper construction, in which a rack and gear drive is provided for lifting and lowering a blade plate. Racks are formed in each of the opposing sides of the blade plate, in particular, for use in the environment of ducts leading, e.g., from combustion chambers to scrubbers and thence to a smokestack. Such devices are typically very large with a blade being several feet in height and weighing as much as several hundred or thousand pounds. In this reference, racks 46 are held in vertically extending U-shaped holders 47 affixed to each of the vertical side edges of the main body of the blade 45. In addition, the blade of this reference is configured to be moved to and away from the frame which holds the blade, when the blade is in its lowered (closed) position, to facilitate the seal between the blade and the frame (when the blade is in its lowered position blocking the passageway). This movement toward and away from the blade frame is permitted by

the use of the U-shaped holders, which extend parallel to the sides of the pinions, but at a distance to either side thereof (see Fig. 4). The movement of the blade in the upstream/downstream directions is prompted by a movable thrust frame 58 (see, col. 4, line 51 - col. 5, line 39), which moves upstream or downstream, relative to the direction of flow of the gases, to push the damper blade against inner flange 28B (see Fig. 7). Accordingly, of necessity, a certain amount of gross relative **lateral** movement between the rack and the gears is not only permitted (movement perpendicular, not parallel, to the direction in which the damper blade moves), but necessary, for the proper function of the apparatus.

In contrast, the *Imase et al.* reference discloses a rack and gear apparatus which is intended for high precision machinery, such as industrial robots or machine tools, where no "play" of any kind can be permitted. Furthermore, a key feature of the apparatus of *Imase et al.* is to have the gear be continuously thrust against the rack (see, col. 5, ll. 10 - 35). This continuous pressure, in the preferred embodiment disclosed in the reference, is accomplished by the use of a saddle 9, which essentially clamps side edge regions of the base table 3, as can be seen in the only complete illustration of the preferred embodiment, of Fig. 1. The other figures, which show a gear and rack omit the saddle structure merely for purposes of simplifying the illustration. As may be readily appreciated, if the gear is to be maintained in a constant state of pressurization against the rack, no such relative movement between the rack and the gear can be permitted.

Therefore, Applicant respectfully submits that one seeking to modify the apparatus of the *Bachmann et al.* reference, in which relative **lateral** movement or "play" between the rack and the gear is essential for the functioning of a critical feature of the apparatus (the movement of the blade plate toward and away from the frame), would be affirmatively prompted **away** from looking to a high-precision apparatus such as that disclosed in the *Imase et al.* reference, much less adopt the teachings of that reference. This is because the two references affirmatively teach away from one another with respect to a common structural characteristic, namely the positional and operational relationship between the gear and the rack. Accordingly, Applicant submits

that not only is there no teaching or suggestion for the combination of those references, but also any attempt to combine the teachings of these references would serve to frustrate the goals and objectives of each. Therefore, Applicant respectfully submits that the Examiner's proposed combination of those references is improper and may not be used as a basis for rejection of the claims under 35 U.S.C. 103(a).

Even if the *Bachmann et al.* and *Imase et al.* references **could** properly be combined, which Applicant respectfully submits is not the case, the resulting construction remains incapable of even remotely teaching or suggesting the patentably distinguishing structure and mode of operation of Applicant's invention of amended claims 1 and 15. A combination of the general damper apparatus of *Bachmann et al.*, with the pressurized pinion of *Imase et al.* would require that the resultant structure have a pinion that is continuously thrust against the edge of the blade plate. That is, the pinion would impart forces against the rack, not only in the direction of movement of the rack, but also in a direction perpendicular to the direction of movement of the rack, in varying proportions, due to the complex curved shape of the involute rack teeth as disclosed in *Imase et al.*

In contrast however, Applicant's invention, as defined in amended independent claims 1 and 15, requires, among other limitations, that the toothed rack further comprise a series of teeth formed in at least one side of the plate, **the teeth having opposing sides extending, at least in part, substantially parallel to one another and substantially perpendicular to each of said two opposite directions of movement of the plate.** The Examiner, in the pending office action, completely ignores this structural limitation, which is simply not present or suggested in either of the *Bachmann et al.* or *Imase et al.* references, and as such, cannot be deemed to be present in any purported combination thereof.

Support for this limitation, as discussed at length hereinabove, is not only inherent in the basic mode of operation of Applicant's apparatus, but may be found in the application as originally filed, both in Figs. 3 and 10 (wherein the straight, predominantly parallel edges of the teeth are shown), as well as in paragraph [0009] of the application as originally filed (which is in the Summary of the Invention section of

the application), wherein it states that “[t]he toothed edges of the blade plate engage with specially designed pinion wheels to impart a **linear** force to the blade plate...” (Emphasis added). Furthermore, it is clearly shown in Fig. 3, that the pinion pins do not “bottom out” in the teeth, and thus cannot impart any significant forces in directions normal to the direction of movement of the plate. In addition, if a pinion pin, which is circular in cross section, confronts a tooth that has a straight edge which is essentially, if not actually, perpendicular to the direction of movement of the blade plate, because there is only point contact between the pinion pin and the blade at any point in time, force can be transmitted essentially **only** in the direction of movement of the blade plate, regardless of the instantaneous direction of motion of the pinion pin which is contacting the tooth of the blade plate.

Accordingly, Applicant respectfully submits that neither of the cited *Bachmann et al.* and *Imase et al.* references, whether taken alone or in combination, is even remotely capable of teaching or suggesting the structure and mode of operation of Applicant’s invention of amended independent claims 1 and 15, particularly with regard to the claimed structure of the teeth on the rack, as discussed (and claimed) at length hereinabove. Therefore, Applicant respectfully submits that the Examiner’s substantive basis for rejection of independent claims 1 and 15, based on the *Bachmann et al.* and *Imase et al.* references, should be deemed overcome. Reconsideration and withdrawal of the rejections of claims 1 and 15, based on the *Bachmann et al.* and *Imase et al.* references, are respectfully solicited.

Applicant likewise traverses the Examiner’s combination of the *Bachmann et al.* and *St-Germaine et al.* references. The *St-Germaine et al.* reference is directed to an apparatus for raising scaffolding, wherein powered pinions on a scaffold or elevator cabin engage teeth mounted on a fixed vertical beam, wherein each tooth consists of not only a flat top side, **but also a concave bottom side**. The pinions are specifically and intentionally configured to make contact only with the flat top sides of the teeth. Such a mechanism has nothing to do with the construction and operation of guillotine dampers such as that disclosed in the *Bachmann et al.* reference, and as such, one of ordinary skill in the art of guillotine dampers would in no way be prompted to look to

scaffolding or construction elevator design in which gravity serves to move the device downwardly, for ideas for modification of a guillotine damper -- which can also be positioned to move side to side, without benefit of gravity, in which the pinion pins must be able to exert force on both sides of the rack teeth, not just one. In view of the foregoing, Applicant respectfully submits that there is no teaching or suggestion for combination of the *Bachmann et al.* and *St-Germaine et al.* references, and for this reason, Applicant submits that the purported combination is improper and that the Examiner's substantive basis for rejection of the claims based on those two references should be deemed overcome.

Even if the purported combination of the *Bachmann et al.* and *St-Germaine et al.* references were proper, which combination Applicant respectfully traverses, Applicant respectfully submits that the resultant combination would still neither teach nor suggest Applicant's invention of amended claims 1 and 15. In particular, as mentioned before, the *Bachmann et al.* completely fails to teach or suggest a rack having a tooth configuration as claimed in claims 1 and 15. Furthermore, the *St-Germaine et al.* reference discloses teeth on the "rack" which completely lack opposing sides having edges which are, at least in part, parallel to one another.

Again, this is because the *St-Germaine et al.* reference is focused solely on a *vertically* moving scaffold, in which the pinions contact only the straight upper surfaces of the teeth. The lower surfaces of the teeth are intentionally curved to provide just enough non-contact clearance to enable the pinion rollers to clear the teeth, as the pinions rotate, while reinforcing the thickness of the base of the teeth, to enable the "rack" to support the weight of the moving scaffold. If the teeth in the rack were thinned, by making both sides straight, that would reduce the amount of material in the base of the teeth, and thus lower their load-bearing capacity.

Applicant's invention, by contrast, is configured for both vertical and horizontal applications, and as such, is configured so that the pinion pins contact both sides of the teeth, depending upon the direction of movement of the blade plate. See, e.g., ¶[0032], wherein horizontal mounting and movement of the blade plate is disclosed.

Accordingly, Applicant respectfully submits that even if the *Bachmann et al.* and *St-Germaine et al.* references could be properly combined, which combination applicant respectfully traverses, Applicant submits that the resulting structure would not and could not teach or suggest applicant's patentably distinguishing structure and mode of operation of amended claims 1 and 15, and furthermore could not be further modified to do so.

Therefore, Applicant submits that the Examiner's substantive basis for rejection of claims 1 and 15, based on the *Bachmann et al.* and *St-Germaine et al.* references, should be deemed overcome, and reconsideration and withdrawal of the rejection of claims 1 and 15, based on the *Bachmann et al.* and *St-Germaine et al.* references, are respectfully solicited.

Applicant submits that all of the Examiner's substantive bases for rejection of amended independent claims 1 and 15 have been overcome, and that claims 1 and 15 should be deemed to patentably distinguish over the cited references. Reconsideration and withdrawal of all of the rejections of amended independent claims 1 and 15, and allowance thereof, are respectfully solicited.

Inasmuch as dependent claims 2 - 8 and 10 - 14 and 16 - 21 merely serve to further define the subject matter of amendment independent claims 1 and 15, which themselves should be deemed patentable, Applicant submits that dependent claims 2 - 8 and 10 - 14 and 16 - 21, likewise should be deemed to patentably distinguish over the cited prior art. Reconsideration and withdrawal of the rejection of claims 2 - 8 and 10 - 14 and 16 - 21, and allowance thereof are respectfully solicited.

Based on the foregoing, Applicant submits that the application, as a whole, including all of claims 1 - 8 and 10 - 21, is in a *prima facie* condition for allowance at this time, and reconsideration and allowance of the application, are respectfully solicited.



Should anything further be required, a telephone call to the undersigned, at (312) 456-8400, is respectfully invited.

Respectfully submitted,  
GREENBERG TRAURIG, LLP

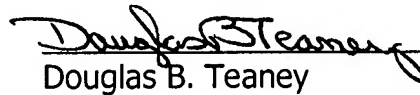
Dated: April 30, 2007

  
Richard D. Harris

One of Attorneys for Applicant

**CERTIFICATE OF MAILING**

I hereby certify that this AMENDMENT AND COMMUNICATION is being deposited with the United States Postal Service as first class mail, in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on April 30, 2007.

  
Douglas B. Teaney